

## **IN THE CLAIMS:**

Please amend the claims as follows

1. (previously canceled) ~~A hydrocarbon fuel gas autothermal reformer assembly comprising:  
a) a monolithic open cell foam catalyst bed, said catalyst bed including an inlet end and an outlet end, an inlet portion of said catalyst bed being provided with a catalyst which is operable to combust a portion of the fuel gas so as to raise the temperature of said catalyst bed while inhibiting carbon deposition in catalyzed cells of said foam;  
b) a fuel gas inlet passage, said fuel gas inlet passage being disposed in heat exchange relationship with a processed fuel gas stream disposed in an outlet passage from said catalyst bed whereby heat will be transferred to said fuel gas inlet passage from the processed fuel gas stream;  
c) an air inlet passage, said air inlet passage being disposed in heat exchange relationship with the processed fuel gas stream whereby heat from the processed fuel gas stream will be transferred to said air inlet passage; and  
d) a fuel gas reforming catalyst deposited in said foam catalyst bed.~~
2. (currently amended) The autothermal reformer assembly of Claim 4 ~~13~~ wherein said catalyst bed includes a noble metal and calcium oxide.
3. (currently amended) The autothermal reformer assembly of Claim 4 ~~13~~ wherein said foam catalyst bed comprises at least two catalyzed regions wherein each region has a different catalyst composition.
4. (original) The autothermal reformer assembly of Claim 3 wherein a first region of said foam catalyst bed contains a noble metal catalyst in combination with calcium oxide.
5. (original) The autothermal reformer assembly of Claim 4 wherein a second region of said foam catalyst bed contains a base metal catalyst in combination with calcium oxide.
6. (original) The autothermal reformer assembly of Claim 5 wherein said first region of said foam catalyst bed contains a platinum catalyst, and said second region of said foam catalyst bed contains a nickel catalyst.
7. (original) The autothermal reformer assembly of Claim 4 wherein said first region of said foam catalyst bed contains an iron oxide/calcium oxide catalyst mixture and said second region of said foam catalyst bed contains a nickel catalyst.
8. (previously canceled) ~~The autothermal reformer assembly of Claim 7 wherein said first~~

~~region of said catalyst bed is further promoted with a noble metal catalyst.~~

9.(original) The autothermal reformer assembly of Claim 4 wherein said noble metal catalyst is a catalyst selected from the group consisting of platinum, palladium and rhodium, and mixtures thereof.

10.(currently amended) The autothermal reformer assembly of Claim 4 ~~13~~ wherein said foam catalyst bed includes a first region which contains a noble metal catalyst and a calcium oxide catalyst, and a subsequent region which does not contain calcium oxide and does contain said noble metal catalyst.

11.(original) The autothermal reformer assembly of Claim 10 wherein said noble metal catalyst is selected from the group consisting of platinum, palladium and rhodium.

12.(currently amended) The autothermal reformer assembly of Claim 4 ~~13~~ wherein said foam catalyst bed includes at least one ceramic foam support body.

13.(previously amended) A hydrocarbon fuel gas autothermal reformer assembly comprising:

- a) a monolithic open cell foam catalyst bed, said foam catalyst bed including a metal support selected from the group consisting of stainless steel, nickel alloys and iron-aluminum alloys, said catalyst bed including an inlet end and an outlet end, an inlet portion of said catalyst bed being provided with a catalyst which is operable to combust a portion of the fuel gas so as to raise the temperature of said catalyst bed while inhibiting carbon deposition in catalyzed cells of said foam;
- b) a fuel gas inlet passage, said fuel gas inlet passage being disposed in heat exchange relationship with a processed fuel gas stream disposed in an outlet passage from said catalyst bed whereby heat will be transferred to said fuel gas inlet passage from the processed fuel gas stream;
- c) an air inlet passage, said air inlet passage being disposed in heat exchange relationship with the processed fuel gas stream whereby heat from the processed fuel gas stream will be transferred to said air inlet passage; and
- d) a fuel gas reforming catalyst deposited in said foam catalyst bed.

14.(original) The autothermal reformer assembly of Claim 13 wherein said metal support is connected to a source of electrical current so as to serve as a resistance heating element during start-up of said reformer assembly.

15.(original) The autothermal reformer assembly of Claim 14 wherein said metal support is

electrically heated to operating temperatures within about twenty seconds after applying electrical current thereto.

16.(currently amended) The autothermal reformer assembly of Claim + 13 wherein said catalyst bed is cylindrical in shape.

17.(currently amended) The autothermal reformer assembly of Claim + 13 wherein said fuel gas inlet passage contains a fuel gas/steam mixture.

18.(currently amended) The autothermal reformer assembly of Claim + 13 wherein said air inlet passage contains an air/steam mixture.

19.(currently amended) A hydrocarbon fuel gas autothermal reformer assembly comprising:

- a) a cylindrical monolithic open cell foam catalyst bed, said foam catalyst bed including a metal support selected from the group consisting of stainless steel, nickel alloys and iron-aluminum alloys, said catalyst bed including an inlet end and an outlet end;
- b) a fuel gas/steam mixture inlet passage; and
- c) a fuel gas reforming catalyst deposited in said cylindrical foam catalyst bed.

~~20.(previously canceled) A hydrocarbon fuel gas autothermal reformer assembly comprising:-~~

- ~~a) a monolithic open cell foam core catalyst bed, said catalyst bed including an inlet end and an outlet end, an inlet portion of said catalyst bed being provided with a catalyst which is operable to combust a portion of the fuel gas so as to raise the temperature of said catalyst bed while minimizing carbon deposition in catalyzed cells of said foam core; and~~
- ~~d) a fuel gas reforming catalyst deposited in said foam core catalyst bed.~~

21.(currently amended) A hydrocarbon fuel gas autothermal reformer assembly comprising:

- a) a monolithic open cell foam catalyst bed, said foam catalyst bed including a metal support selected from the group consisting of stainless steel, nickel alloys and iron-aluminum alloys, said catalyst bed including an inlet end and an outlet end, an inlet portion of said catalyst bed being provided with a noble metal-promoted catalyst which is operable to combust a portion of the fuel gas at a temperature of about 500°F thereby enabling start up of the reformer assembly while inhibiting carbon deposition in catalyzed cells of said foam;
- b) a fuel gas inlet passage, said fuel gas inlet passage being disposed in heat exchange relationship with a processed fuel gas stream disposed in an outlet passage from said

catalyst bed whereby heat will be transferred to said fuel gas inlet passage from the processed gas stream;

c) an air inlet passage, said air inlet passage being disposed in heat exchange relationship with processed fuel gas stream whereby heat from the processed fuel gas stream will be transferred to said air inlet passage; and

d) a fuel gas reforming catalyst deposited in said foam catalyst bed.

22.(currently amended) A hydrocarbon fuel gas autothermal reformer assembly comprising a monolithic open cell foam catalyst bed, said foam catalyst bed including a metal support selected from the group consisting of stainless steel, nickel alloys and iron-aluminum alloys, said catalyst bed including an inlet end and an outlet end, an inlet portion of said catalyst bed being provided with a noble metal-promoted catalyst which is operable to combust a portion of the fuel gas at a temperature of about 500°F thereby enabling start up of the reformer assembly while inhibiting carbon deposition in catalyzed cells of said foam catalyst bed.